DOCUMENT RESUME

ED 441 766 SP 039 222

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TITLE The Effect of Site-Based Preservice Experiences on Elementary Social Studies, Language Arts, and Mathematics Teaching Self-Efficacy Beliefs.

PUB DATE 2000-04-00

NOTE 16p.; Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 24-28, 2000).

PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.

DESCRIPTORS *College School Cooperation; Elementary Education; Elementary School Mathematics; Elementary School Teachers; Higher Education; Language Arts; Mathematics Education; *Partnerships in Education; Preservice Teacher Education; *Professional Development Schools; *Self Efficacy; Social Studies; *Student Teacher Attitudes; Student Teachers; Teacher Competencies; Teaching Skills

ABSTRACT

This study examined the effectiveness of a Professional Development School (PDS) student teaching program within one university's teacher education program. The program is field-based during students' entire senior year, which is divided into a PDS semester and student teaching. During the PDS semester, students are placed in PDS sites around a large metropolitan area with diverse children and lower socioeconomic conditions. During student teaching, students are placed with mentor teachers at schools and monitored by university supervisors. They observe teaching and gradually take over classroom duties. Study participants were preservice teachers who had been placed at PDS sites and who were in the semester preceding student teaching. For two semesters, two groups of preservice teachers completed a pretest and posttest, the Science Teaching Efficacy Belief Instrument and a modified version of the same instrument, to measure self-efficacy beliefs in various subject areas. Results indicated that the PDSs were successful training sites for these students. PDS participants with low self-efficacy at the beginning of the semester made positive judgments about how well they could teach at the end of the semester. Students had opportunities for authentic performance, vicarious experiences, encouragement from others, and positive emotional tones. (Contains 32 references.) (SM)

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The Effect of Site-based Preservice Experiences on Elementary Social Studies, Language Arts, and Mathematics Teaching Self-Efficacy Beliefs

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Introduction and Need for the Study

1 The number of Professional Development Site (PDS) collaborative efforts has rapidly grown during the 1990s (Teitel, 1996) due, perhaps, to a vision of their being an "exemplary learning environment that is capable of transforming both teacher preparation and the schooling of children..." (Million & Vare, p. 711). Indeed, calls for teacher education to move into Professional Development Sites have come from many directions (Darling-Hammond, 1996; Shanker, 1996; Wise & Leibbrand, 1996). National Council for Accreditation of Teacher Education (NCATE) colleges and universities, for example, "are expected to enter into partnerships with the schools, thereby linking preparation and practice more closely than even before" (Wise & Leibbrand, 1996, p. 204).

Not only have many calls been made for the improvement of teacher education in general through on-site school/university partnerships, but there have been concerns for the improvement of preservice teacher training in many subject areas as well (Bybee, 1993; National Research Council, 1996; Sivertsen, 1993). In science education, for example, the science education of preservice elementary school teachers is seen as a "critical component in the systemic approach necessary to make real and lasting change a classroom reality" (Raizen, 1994, p. 7).

Part of the answer in producing excellent first-year teachers is self-efficacy (Ramey-Gassert & Shroyer, 1992). For example, "Teachers' beliefs in their ability to motivate students and promote learning play a critical role in determining educational outcomes, perhaps affecting academic achievement more strongly and directly than student characteristics," note Soodak and Podell (1997, p. 214) from their research with work done by Ashton and Webb (1986) and Bandura (1993). As a follow up to Gibson and Dembro's (1984) and Ashton's (1984) work on the impact of efficacy on classroom behaviors, Enochs and Riggs (1990) developed an instrument that measured preservice teachers' self-efficacy beliefs in science.

Because self-efficacy is a situation specific construct, this study was designed and conducted as a parallel to that of Enoch and Riggs (with modification toward subject areas - language arts, social studies, and mathematics) in order to help assess the effectiveness of a site-based teacher education program with respect to the teaching of these three elementary subject areas. This adds to the body of research of Wingfield (1998) in PDS science teaching research. The body of knowledge on the many benefits of PDSs is still small. However, by assessing in the area of self-efficacy, teacher educators can begin to determine whether this format for teacher training (PDSs) can be of greater value for future teachers.

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Methods

Program Description

The undergraduate teacher education program, PUMA (Pedagogy for Urban and Multicultural Action), is field-based during students' entire senior year. During the first two years at the university, Texas core subject areas must be fulfilled (mathematics, English, science, and so forth). Normally, during the junior year students enter the college of education and begin their preprofessional development course work. Required course work includes technology for teachers, a multicultural course, educational psychology, art for teachers, content area reading, and health for teachers. In addition, students select and begin course work for a specialization within the college such as Reading, Early Childhood or Bilingual Education, or they may continue to work on a subject area specialization in a content area.

The final field-based year is divided into two semesters: the Professional Development Semester and Student Teaching. During the Professional Development Semester, a preservice teacher is placed in one of seven Professional Development Sites (PDSs) around a large metropolitan area. Each PDS is selected for its multicultural mix of students and lower socioeconomic conditions coupled with its district reputation for being a school that strives to meet our "best practice" philosophies about teaching. Collaboration is an important element in the process for selection, so we ask all members of each school to vote on the partnership. Those schools where everyone, including even the cafeteria personnel and custodians, consider themselves to be teacher educators are the most positive. These PDS sites usually consist of a cluster of two to four schools. The selected PDS site schools are normally elementary schools partnered with an intermediate and/or a junior high school. University professors teach courses in the following areas at one of the school sites in a cluster rather than at the university: induction into teaching, mathematics methods, language arts methods, science methods, and social studies methods methods. When preservice teachers are not attending classes, they are placed with a mentor teacher in a classroom for active observation and beginning teaching experiences. The preservice teacher field-based commitment is four and one half days a week. In addition to assignments that require individual classroom interaction with teachers and students, university instructors often schedule classroom demonstrations using students in the PDS sites. Preservice teachers design and teach an interdisciplinary unit during this time as well. The culminating event is an oral presentation of a portfolio that preservice teachers have created from their experiences. Their audience is the school mentor, instructors, and often friends, family, and principals.

The second part of the year is the student teaching semester. During this 14-week semester, preservice teachers are placed with a mentor teacher at a school and are monitored by a university supervisor. They gradually take over the teaching and professional requirements of the regular classroom teacher. For the student teaching semester, they may request their PDS site or move to another of our 32 cooperating districts in the area.

Participants

Participants (n=141, Semester 1, n = from 68-83 Semester 2) were preservice teachers in the semester preceding student teaching. Each had been placed in one of six to seven PDS clusters described above. All preservice teachers attended methods classes (12 hours per week), including language arts, mathematics, social studies and science. This instruction, plus an induction into teaching course (4 hours), is also held on the elementary/intermediate school PDS site, allowing university instructors to model lessons using children at various grade levels in these subject areas and to have preservice teachers teach lessons in these subject areas while university instructors observed and offered feedback. Two days per week, preservice teachers were assigned to the classroom teacher where they served as aides and gradually increased their activities. From helping small groups of children to teaching short lessons in these subject areas separately, their experiences culminated with the planning and teaching of an integrated thematic unit. Preservice teachers are required to prepare and participate in a number of small and large peer group experiences to teach language arts, social studies, and mathematics lessons using various methods during the semester.

Procedures

For two semesters two different groups of preservice teachers were given a pre- and post Science Teaching Efficacy Belief Instrument (STEBI-B) and a modified STEBI-B to measure preservice teachers' self-efficacy beliefs in various subject areas (Enochs & Riggs, 1990). For the first semester of administration, reports of language arts, mathematics, and social studies are combined. For the second semester (with a new cohort) results are reported separately for language arts, mathematics, and social studies.

During the first two weeks of the semester, the 23-item survey was given with levels of agreement shown from (5) "strongly agree" to (1) "strongly disagree" on a five-point scale. Scoring was reversed for negative statements. This same instrument was given as a post survey during the last week of the semester. Two constructs were measured as defined by Bandura's (1977) theory (a subject area outcome expectancy scale (STOE) and a personal teaching efficacy scale (PSTE).

Limitations

Several university methods instructors/professors in this program instruct multiple clusters. However, there are instructors who are unique to the cluster, so instructor differences between clusters may play a role in the results. The "personality" of each PDS site as well as the individual school and the mentor teacher's personality also may have an effect on how much the preservice teacher was able to be involved in the classroom and see positive modeling. Finally, the emphasis on the state test for Texas students on basic skills (TAAS) also impacts the time preservice teachers spend in active teaching and observing actual lessons in the spring semester. Often teachers are so

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busy reviewing skills that new materials/lessons are rarely introduced directly prior to the test administration. This may have had an effect on differences between semesters.

Results/Conclusions

The pretest and posttest of the STEBI-B were analyzed for significance in mean scores, and ninety five percent confidence level ($p<.05$) was set as the criterion level for determining statistical significance. Results yield significance in the first semester's data is indicated in the following items as indicated in Table 1 for the first semester's data.

Table 1. (Language Arts, Mathematics, and Social Studies Combined. Spring)

Strongly Agree = 5; Agree = 4; uncertain = 3; Disagree = 2; Strongly Disagree = 1

	Means			
(Significant items only)	Pre	Post	t	prob.
1. When a student does better than usual in language arts, mathematics, or social studies, it is often because the teacher exerted a little extra effort.	2.57	3.3	6.94	.0001
2. I will continually find better ways to teach language arts, mathematics, and social studies.	3.56	3.75	2.99	.003
3. I know the steps necessary to teach language arts, mathematics, and social studies concepts effectively.	2.13	3.27	11.32	.0001
4. When a low-achieving child progresses in language arts,social studies, or mathematics, it is usually due to extra attention given by the teacher.	2.76	3	2.44	.01
5. I understand language arts, mathematics, and social studies concepts well enough to be effective in teaching these elementary subjects.	2.74	2.81	7.95	.0001
6. The teacher is generally responsible for achievement in language arts, social studies, and mathematics.	2.54	2.81	2.77	.005
7. I wonder if I will have the necessary skills to teach language arts, social studies, and mathematics.	1.61	1	-4.98	.0001
9. I will usually be at a loss as to how to help the student understand them better.	2.15	1.7	-5.06	.0001
10. When teaching language arts, social studies, or mathematics, I will usually welcome student questions.	3.47	3.64	2.38	.01
11. I do not know what to do to turn students on to language arts, social studies, or language arts concepts.	2.45	1.63	-7.97	.0001

Significant differences were found both in terms of language arts, mathematics, and social studies teaching outcome expectancy statements and in terms of personal teaching efficacy statements.

Tables 2, 3, 4 and 5 report individual pre-/post significant differences in a different semester using the same instruments, but with individual reporting in each area (language arts, socials studies, and mathematics).

Table 2. Language Arts, Social Studies, Mathematics (Fall)

Strongly Agree = 5; Agree = 4; uncertain = 3; Disagree = 2; Strongly Disagree = 1

##Scores for items are shown as reversed/recoded for scales

	Language Arts Means			Soc. Studies Means			Mathematics Means		
	Pre (n=68)	Post	t	Pre (n=82)	Post	t	Pre (n=72)	Post	t
1. When a student does better than usual in _____it is often because the teacher exerted a little extra effort.	3.65	4.06	2.39*	4	4.06	.69*	3.84	4.15	2.35*
2. I will continually find better ways to teach ____	Slight increase/No Significant Subject Areas								
##3. Even if I try very hard, I will not teach___ as well as I will most subjects.	Slight increase/No Significant Subject Areas								
4. When the ____grades of students improve, it is often due to their teacher having found a more effective teaching approach.	Slight increase/No Significant Subject Areas								
5. I know the steps necessary to teach ____concepts effectively.	2.92	4.10	7.55***	3.19	3.97	5.67***	2.84	4.11	10.92***

	Language Arts			Soc. Studies			Mathematics		
	Pre	Post	t	Pre	Post	t	Pre	Post	t
##6. I will not be very effective in monitoring ___ activities.							2.83	3.25	2.31*
7. If students are underachieving in ___, it is most likely due to ineffective ___ teaching.				3.06	3.48	3.02**			
##8. I will generally teach _____ ineffectively.	Slight increase/No Significant Subject Areas								
9. The inadequacy of a student's ____ background can be overcome by good teaching.				3.95	4.13	2.08*			
##10. The low ___ achievement of some students cannot generally be blamed on their teachers.				2.96	3.27	2.24*			
11. When a low-achieving child progresses in ___, it is usually due to extra attention given by the teacher.	Slight increase/No Significant Subject Areas								
12. I understand ____ concepts well enough to be effective in teaching elementary ____.	3.25	4.24	7.81***	3.53	4.10	5.12***	3.54	4.26	4.87***
##13. Increased effort in____ teaching produces little change in some students' ___ achievement.	2.25	2.43	1.93*						
14. The teacher is generally responsible for achievement of students in ____.							3.63	3.83	2.25*
15. Students' achievement in ____ is directly related to their teacher's effectiveness in ____ teaching.							3.71	3.9	2.21*

	Language Arts			Soc. Studies			Mathematics		
	Pre	Post	t	Pre	Post	t	Pre	Post	t
16. If parents comment that their child is showing more interest in ____ at school, it is probably due to the performance of the child's teacher.	Slight increase/No Significant Subject Areas								
##17. I will find it difficult to explain to students why _____ is relevant.							2.97	3.24	2.04*
18. I will typically be able to answer _____ questions.	3.88	4.20	3.83**				3.75	4.19	2.83**
##19. I wonder if I will have the necessary skills to teach ___.	2.15	3.13	5.79***	2.36	2.9	2.7**	2.11	3	5.56***
##20. Given a choice, I will not invite the principal to evaluate my ____ lesson.	2.83	3.25	3.53**				2.79	3.17	2.29*
##21. When a student has difficulty understanding a ____ concept, I will usually be at a loss as to how to help the student understand it better.	Slight increase/No Significant Subject Areas								
22. When teaching ____, I will usually welcome student questions.	Slight increase/No Significant Subject Areas								
##23. I do not know what to do to turn students on to _____.	2.59	3.20	5.02***	2.72	3.2	3.3***	2.36	3.28	6.54***

* $p < .05$
** $p < .001$
*** $p < .0001$

Language Arts Scales				
Overall items (23) Pre/Post t-test: Significant)	3.248	3.514	3.02	.0064*
Self-Efficacy Scale (Significant_	3.049	3.514	4.05	.0016*
Outcome Scale (Non-significant)	3.517	3.5053	.771	.8577
Mathematics Scales				
Overall items (23) Pre/Post t-test: (Significant)	3.3406	3.637	3.3167	.003*
Self-Efficacy Scale (Significant)	3.2	3.68	3.6779	.003*
Outcome Scale (Non-significant)	3.523	3.581	.8872	.398
Social Studies Scales				
Overall items (23) Pre/Post t-test: (Non-significant)	3.421	3.5283	1.6737	.1084
Self-Efficacy Scale	3.3209	3.5336	2.6522	.0211*
Outcome Scale (Non-significant)	3.5213	3.5512	.3296	.7492

The pretests and posttest of the modified STEBIs were analyzed for significance differences in mean scores. Each item in these subject areas (language arts, social studies, and mathematics) increased in self-efficacy feelings towards teaching in the area listed, though not all showed significant differences between the beginning of the field-based semester and its completion. In the combination of all subject areas reported in the *first semester* of administration, 11 items (combined) indicated significant differences. In the second comparison, not all subject areas reported growth in the same items. In number of items that were significantly improved during the *second administration* (reported separately) of the pre/post survey, language arts had 8 significant items, mathematics had 11, and social studies had 8. Interestingly, preservice teachers reported significant changes in all subjects only in items 1, 5, 12, 19, 23--four of which were items from the Personal Teaching Efficacy Scale.

Scales calculated during the second semester showed some interesting trends. All personal self-efficacy scales (PSTEs) came out with significant differences, though the social studies area was lowest in significance. The outcome expectancy scales (STOE), however, were all non-significant in every subject area. Outcome efficacy can be referred to as the belief in how well

students can actually be taught, given limitations such as their family situation, school conditions, academic ability and so forth, while personal self-efficacy is characterized as a belief in one's own ability as a teacher to bring about positive student change and motivation (Gibson & Dembro, 1984). This may indicate that students have a high feeling of being able to teach in each subject area, yet not have a feeling of being able to make a significant effect on the eventual outcome for students because of "other" circumstances.

Educational Implications

The blend of theory and practice provided by the PDS schools seems to be a positive one, as numerous experiences contributed to the increase in personal teaching efficacy. Self-efficacy, as a part of Bandura's (1977) research on the social learning theory, is the psychological construct concerned with judgments about how well one can organize and execute courses of action required to deal with prospective situations. Perceived self-efficacy theory, or perceived performance capability, has been researched in many domains. In education, the construct of teachers' sense of efficacy has been correlated with various measures of teacher effectiveness, including classroom behaviors, attitudes, commitment and reactions to classroom problems (Ashton, Webb & Doda, 1983; Evans & Tribble, 1986; Tschannen-Moran, Hoy, & Hoy, 1998). Preservice teachers who began their semester with a belief that they could not do that well in these areas in order to teach these listed subjects, ended their semester with a more positive view of themselves as teachers of social studies, mathematics, and language arts.

In four areas identified by Bandura as sources of information used to determine self-efficacy (mastery experiences, vicarious experience, verbal persuasion, and positive emotional tone), *all* appear in the PDS. In contrast to a traditional teacher education program, the PDS model on a theoretical level enhances these four areas. For example, many opportunities for authentic performances are available (prior to student teaching) as university instructors model instruction with borrowed PDS school classes, then small groups of preservice teachers go out into reserved classrooms and teach these example lessons. Preservice teachers also design and teach lessons with PDS students with the support of university instructors, often first practicing those lessons with peers within class time. The use of students for authentic performances is not often available in university-based classrooms. All preservice teachers' lessons are carefully supported and aimed at success (rather than allowing them to be on their own enough to experience failure during the beginning steps) by those involved in the PDS experience--5 university professors and a mentor teacher(s). Further, PDS sites are selected in multicultural, lower SES areas, so preservice teachers experience early success with authentic performances with children in schools that may or may not have been similar to their own backgrounds. The progression of these authentic teaching experiences is gradual. Teaching to small groups of peers leads to teaching an entire class of peers. Then, teaching a PDS classroom together with a group of peers leads to teaching all alone. Thus, small supported steps are taken towards self-efficacy in each subject area. Preservice teachers are able to view themselves as successfully able to teach exciting lessons using the latest methodology

in the various subject areas (while managing a multicultural, lower SES classroom in a variety of positive ways)--because they have done it!

Vicarious experiences, (the observation of others succeeding or failing) also an essential part of obtaining self-efficacy for Bandura, is provided by seeing university instructors and classroom teachers interact with PDS students in their assigned activities--often in a directed observation with required reflection. These observations began to help preservice teachers expand their vision/identity of themselves as "teachers" throughout the semester. In addition, in methods classes preservice teachers watch each other often as they teach individually and as a small group. A requirement for teaching an integrated unit requires that each member of the class do a peer coaching, an observational instrument scoring, and a video taping for a peer. This also enhances research done by Schunk (1996) who notes that observation of *similar* models affects self-efficacy with the idea of, "Well, if they can do it, so can I!"

Verbal or social persuasion (encouragement from others) was also a strong component of being in a PDS. The relationship established with the mentor teacher is one that provides a great deal of verbal support. Preservice teachers are encouraged to work with students in small groups until they were ready to take over teaching a unit in which language arts, social studies, mathematics, and/or science was a required element. University subject area instructors, instructors in induction into teaching, and mentor teachers provide written and oral verbal feedback in evaluating lesson designs and performance with PDS children. Another related area of self-efficacy researched by Graham and Weiner (1996) states that self-efficacy increases when students receive rewards based on *performance*, as performance rewards signal increasing competence. Preservice teachers in PDSs receive feedback during the entire semester in various performance situations. Once more, these are verbal, as well as performance rating sheets. Another essential area provided by a PDS is support provided by a peer cohort assigned to one PDS--all classes are taken together and much positive socialization and encouragement occurs during the course of the semester. Again, preservice teachers are asked during the semester to observe each other, rate each other, and debrief using a performance scale in addition to peer coaching. These are always very verbally supportive. Hoy and Woolfolk (1993) stress, however, that efficacy grows from *real* success with students rather than *only* the "moral support or cheerleading of professors and colleagues" (Woolfolk, p. 394), and advises education students that any experience or training that helps success in the day-to-day task of teaching will provide a foundation for developing a sense of efficacy in a career. The PDS experience provides opportunities early on not only for "cheerleading" but also for actual success for preservice teachers in the workplace with five university professors, a mentor teacher, and a supportive school.

Psychological states (positive emotional tones) are also noted in the PDS site. Because many preservice teachers view these PDS experiences as the beginning of a career rather than another set of courses, there are higher expectations and increased psychological states. Many of these preservice teachers know that recommendations from their PDS school will enhance their chances of quick job offers and many want to stay in their site for student teaching. During the semester the emphasis on cooperation of all cohort members is stressed. Another part of the

positive PDS experience is reflective in nature. Messages emphasized in reflective discussion, for example, read:

> Failure? No, just another opportunity to learn for the next time.
> Every lesson should be (for the teacher) an inquiry or a quiet form of research.
> By regarding an 'imperfection' in the student NOT as a defect in the pupil but as a missing part in one's own abilities *at the moment*, we can concentrate on discovering the answers to fill those gaps.

This direction supports Covington (1992) and Covington and Omelick's (1984, 1987) work on mastery-oriented students who have high self-efficacy. They are not fearful of failure because it does not threaten self-worth. Instead, it offers a chance to take risks, seek feedback, and gain more skill.

The more positive conclusions found in this study suggest success for PDS schools as training centers for teachers-to-be of language arts, mathematics, and social studies. Future studies are needed to follow the long-term effects, especially concerning classroom behaviors on participants as they continue in their careers in teaching those subject areas examined. Some researchers have found that a high sense of self-efficacy declines in the first years of teaching. However, our evidence seems to point to a positive trend in having preservice self-efficacy beliefs impact the teaching of these subject areas. Through Bandura's (1993) and Zimmerman's research (1995) we know that if self-efficacy is high, higher goals will be set, there will be less fear of failure, and longer persistence rates. Also, according to Gibson and Dembro (1984), teachers will devote more time to academic instruction and take great responsibly for students who have difficulty in learning (Gibson & Dembro, 1984; Soodak & Podell, 1993). We believe that PDS preservice teachers who enter teaching with a higher self-efficacy will, thus, begin their careers as more exemplary teachers in these subject areas and be more apt to stay in the teaching profession. Hammer (1995) also comments that those who have high self-efficacy are more motivated to achieve and tend to be more healthy mentally and physically. Bandura (1993) and Zimmerman (1995) add that when self-efficacy is low, a person is likely to give up easily or avoid tasks altogether. Again, this would be important in the study of persistence and retention of teachers. More research would be needed to determine if retention is affected, but Woolfolk maintains that, "Self-efficacy theory predicts that teachers with a high sense of efficacy work harder and persist longer even when students are difficult to teach in part because these teachers believe in themselves and in their students (p. 393). The collaborative efforts between real schools and colleges of education in establishing PDS sites seems to be, at this point, a positive move in developing self-efficacy and enhancing teacher education

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